

OilTrap Environmental Olympic WA



**The New Generation
of Wastewater Treatment**

Introduction to Electrocoagulation

Electro-----Coagulation

Electro – To cause a pre-determined reaction using a DC electrical current similar to a battery.

Coagulation – The process of changing the particle surface charge, allowing suspended matter to form an agglomeration and subsequent removal from the water solution.



History Of Electrocoagulation

What happened to the good Mr. Dieterich?

Patent issued to A.E. Dieterich in 1906
Filed as the "Electric Water Purifier"
Patent number 823,671

For many years Electrocoagulation fell into relative obscurity. Cost of operation and system weaknesses allowed alternate water treatment processes to take it's place.....

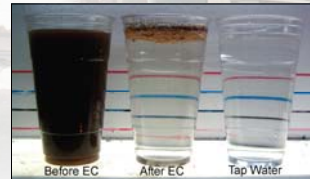
UNTIL NOW!!!

OilTrap's ElectroPulse System has overcome these challenges with state-of-the-art PLC electronics, robust power supplies, system communications, a unique cell design that does not require cleaning, and an engineered system specific for each application.



ElectroPulse

The ElectroPulse electrocoagulation water treatment system represents a major advancement in wastewater treatment using electrocoagulation, a revolutionary electrical-based technology for effectively treating complex waste streams economically and on-site.



The EC system removes a broad range of contaminants including emulsified oils, TPH, suspended solids and heavy...
WITH NO DAILY MAINTENANCE

Identify the Challenges

Boat Hull Cleaning

Pressure washing the hull of a boat will remove marine material and paint particles. Most boat paints contain toxic anti-fouling metals such as copper, zinc, arsenic, tin to reduce marine growth and provide corrosion resistance.

Bilge Water

Regulations prohibit the discharge of bilge water and "gray" water that can be contaminated by oil, fuel or other regulated contaminants.

Stormwater Runoff

Rainwater that comes in contact with the work area should be collected for treatment prior to discharge to surface water. Contaminated stormwater may contain metals such as copper, zinc, oil & grease, and even toluene.

Solution

All of these contaminants can easily be separated from the water through the OilTrap ElectroPulse system.

ElectroPulse Description In Laymen's Terms

Cell Plates – DC current is applied to the electrolytic cell plates causing trace amounts of the plate material to be dissolved into the water. The action is similar to adding separation chemicals (polymers) to a chemical treatment system but much less expensive.

Coagulation – As previously defined, the electrical current and trace dissolved metals from the electrolytic cell plates, cause suspended matter to come together, forming larger particles.

Flotation – During the reaction in the cell housing, oxygen bubbles are formed and attached to the coagulated matter, causing it to rise to the surface in the separation tank where it is removed and transferred to the sludge holding tank. After a short period of time, the air off-gasses allowing the contaminant to sink to the bottom of the sludge holding tank where it stays until it is properly disposed.

ELECTROPULSE - THE NEW GENERATION OF WATER TREATMENT



ELECTROPULSE - THE NEW GENERATION OF WATER TREATMENT

ElectroPulse Performance

Shipyard Hull Wash Water			
Contaminant	Raw	Treated	Removal Efficiency
Zinc	8.14 mg/L	0.107 mg/L	98.6%
Copper	6.78 mg/L	0.0661 mg/L	99%
Lead	0.151 mg/L	ND <0.001 mg/L	>99.3%
Nickel	0.0530 mg/L	0.00357 mg/L	93.2%

Shipyard Builder Wash Water			
Contaminant	Raw	Treated	Removal Efficiency
Wash Water from Washing Exterior of Ship with Red Hull			
Total Suspended Solids	97.1 mg/L	13.0 mg/L	86.6%
Oil & Grease	8.73 mg/L	ND <5 mg/L	>42.7%
Zinc	3.54 mg/L	0.416 mg/L	88.2%
Copper	5.80 mg/L	0.337 mg/L	94.2%
Lead	0.0606 mg/L	0.00189 mg/L	96.9%
Iron	3.69 mg/L	0.297 mg/L	92.0%
Wash Water from Washing Exterior of Ship with Blue Hull			
Total Suspended Solids	1310.0 mg/L	11.0 mg/L	99.2%
Zinc	28.2 mg/L	0.680 mg/L	97.6%
Copper	9.07 mg/L	0.288 mg/L	96.8%
Lead	0.0721 mg/L	ND <0.001 mg/L	>98.6%
Iron	91.5 mg/L	0.145 mg/L	99.8%

ELECTROPULSE - THE NEW GENERATION OF WATER TREATMENT

Benefits of System

No Daily Maintenance
 Since there are no filters separation chemicals required on the system, there is no daily maintenance required on the system.

Treats Multiple Types of Contaminants Simultaneously
 Multiple types of contaminants such as emulsified oil & grease, heavy metals and suspended solids are easily and simultaneously removed from water.

Stabilizes Heavy Metals
 Heavy metals are removed and reduced to hydroxides which generally pass a TCLP test. This will significantly reduce disposal costs.

Totally Automated
 The system is operated using an on-board computer system (PLC), automatically controlling the treatment process. An inexpensive communication package can be added, providing an OilTrap technician the ability to monitor and assist in troubleshooting the system from the factory.

Sludge Dewatering
 OilTrap is currently designing a simple yet very effective sludge dewatering system that provides the ability capture and dewater collected sludge quarterly.

Cost Savings
 Treatment costs, including utilities and consumables, averages 1/3¢ per gallon.

ELECTROPULSE - THE NEW GENERATION OF WATER TREATMENT

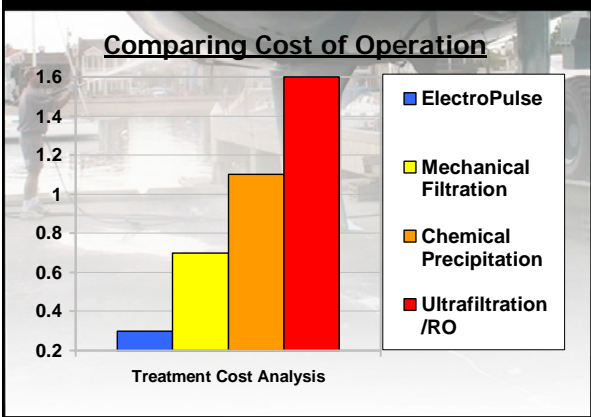
Comparing Water Treatment Technologies

Mechanical Filtration
 Mechanical filtration removes particles larger than 20 microns and free oil & grease from water. It is ineffective at removing small colloidal material (less than 20 microns), emulsified oil & grease or heavy metals.

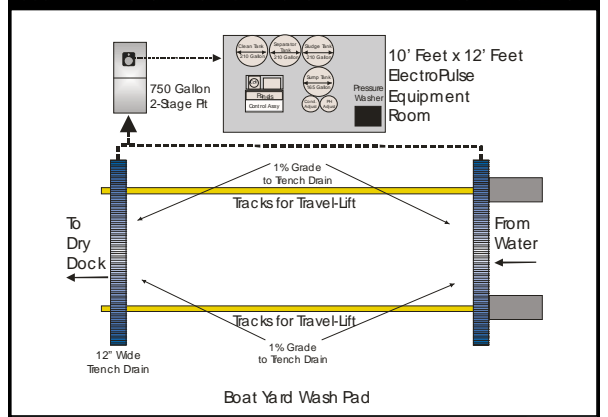
Chemical Treatment
 Chemical treatment has the ability to remove emulsified oil & grease, small colloidal material and heavy metals, but it may require multiple pH adjustments and multiple chemical additions. Chemical costs can be very high.

Micro-Filtration
 Ultra-filtration and reverse osmosis has the ability to remove light emulsified oil & grease and heavy metals but is susceptible to abrasion from suspended solids. Most membranes are in-tolerant to the presence of organics, which could damage them beyond repair. Maintenance and membrane replacement costs can be very high and labor intensive.

ELECTROPULSE - THE NEW GENERATION OF WATER TREATMENT



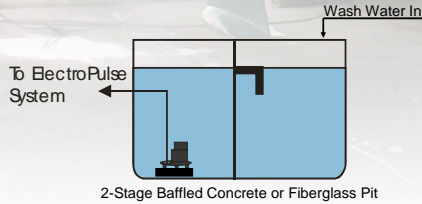
ELECTROPULSE - THE NEW GENERATION OF WATER TREATMENT



Pretreatment

Proper pretreatment ensures effective treatment of the water. A simple 2-stage baffled pit provides separation and containment of:

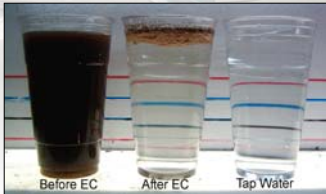
- Floating oil & grease
- Heavy marine debris separation



Let Us Prove It

OilTrap brings vast knowledge about Electrocoagulation and water treatment. With 14 years of experience and almost 200 systems in operation, OilTrap has the experience to solve your water treatment challenges.

It is not uncommon that OilTrap offers a Performance Warranty which I can tell you more about. We have never failed to meet sewer discharge requirements and the treated water is very acceptable for recycle. Let me know how I can be of assistance. Thank you for your time!!!



Marine Experience

- Todd Shipyard – Seattle, WA
- Port of Olympia – Olympia, WA
- Port of Astoria – Astoria, OR
- Dakota Creek Industries – Anacortes, WA
- Gambol Industries – Long Beach, CA
- Marina Bay (Flag Ship Marina) – Quincy, MA
- Atlantic Dry Dock – Jacksonville, FL
- Viking's Marina – Lawrence Harbor, NJ
- OilTrap has almost 200 systems operating in various applications today



Let me know how our team can be of assistance and thank you for your time!!!

Contact Us Today:
OilTrap Environmental
800-943-6495
www.oiltrap.com